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(56) Documents Cited

GB 2282965 A GB 1134731 A GB 0980168 A
GB 0933292 A GB 0329163 A EP 0432999 A2
WO 86/01247 A1

(58) Field of Search

UK CL (Edition O) A4S S1H S1L S1M
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(54) Fixing device for carpet tiles

(57) Carpet tiles are secured by one or more fixing devices (11) having tangs (12) or other means for releasably securing a carpet tile placed on the device (11). The carpet tiles are laid in abutting relationship on the floor with a fixing device (11) bridging abutting edges of at least some of the adjacent tiles such as to secure the said adjacent tiles to each other.

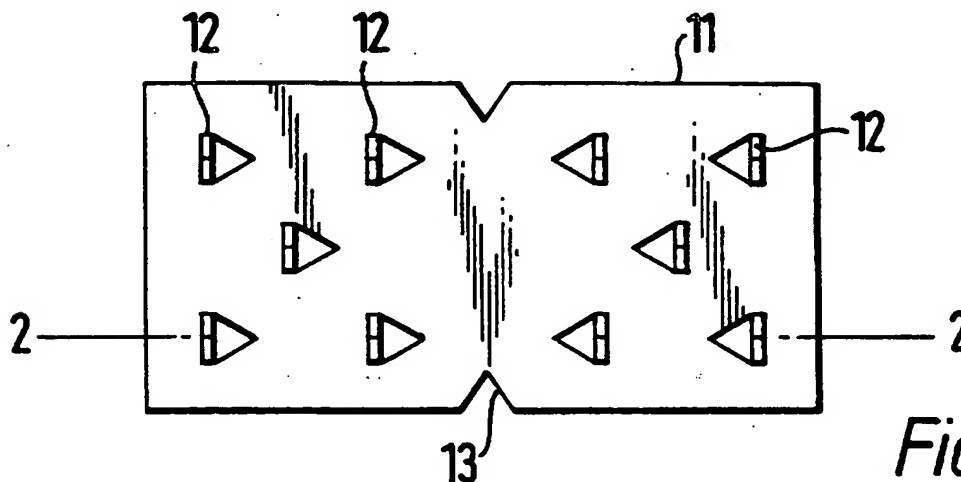


Fig. 1

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1/2

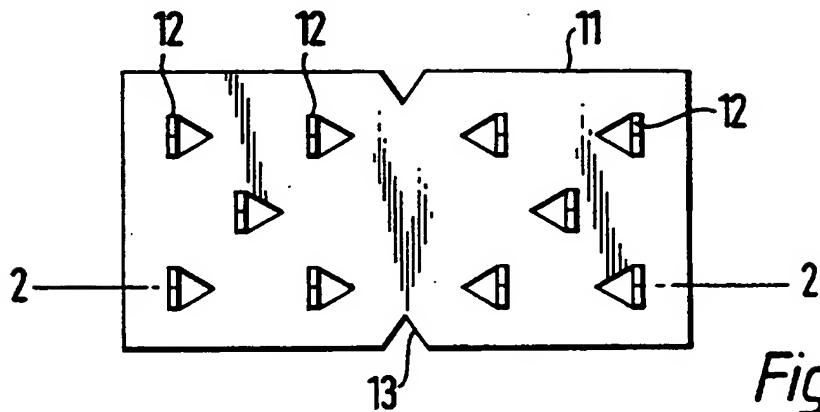


Fig. 1

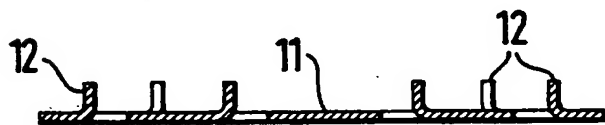


Fig. 2

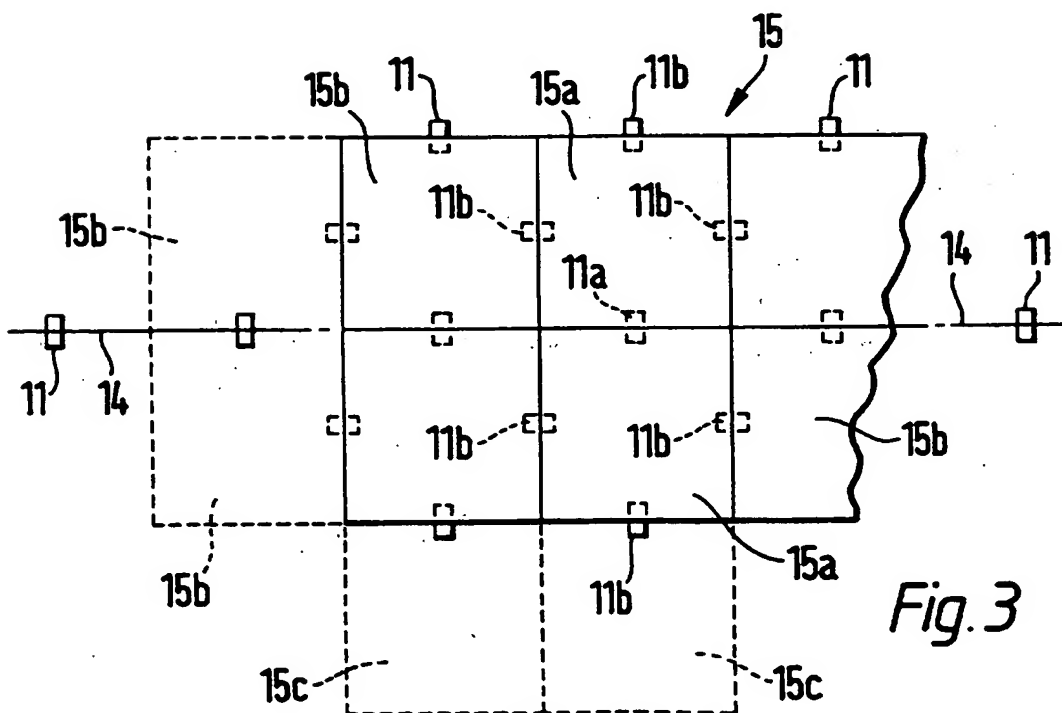


Fig. 3

2/2

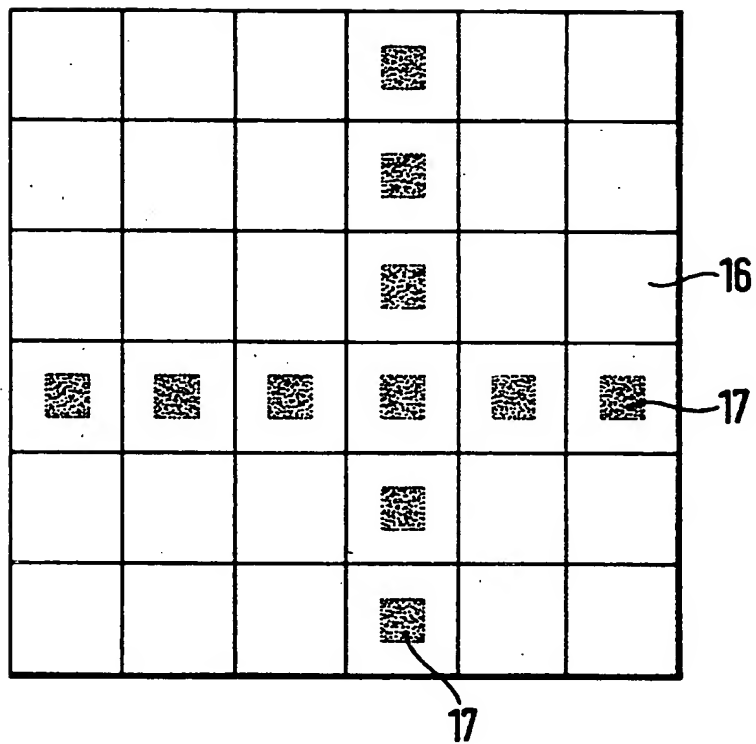


Fig. 4

A METHOD OF LAYING CARPET TILES
AND A DEVICE FOR USE THEREIN

This invention relates to a method of laying carpet tiles and a device for use in this method.

Carpet tiles have, of course, been widely used to cover both domestic and commercial floors for many years.

Carpet tiles are generally more economical and convenient than other forms of floor covering, and they offer the potential advantage that individual tiles can be lifted after initial laying to replace worn or otherwise damaged tiles and to allow access to the facilities commonly provided below the "raised-access" flooring systems often used in modern office buildings.

However, in practice, although carpet tiles can be generally loose laid such that they can be readily lifted, it is customary when laying the tiles to fix a central tile, or sometimes a row of tiles, to the floor with an adhesive such that as subsequent tiles are laid they can be pushed into tight abutment with the fixed tiles to avoid gaps developing as the tiles bed down, and, moreover it is often found that other tiles such as those under chairs or in areas of heavy traffic also have to be adhesively fixed to ensure that they do not become displaced, or to secure them in the required position after they have become dislodged.

Carpet tiles typically have a textile surface and a composite backing, which provides stability and weight and which is normally manufactured from a bitumen based, or modified bituminous material. One object of this invention is to provide a method of laying carpet tiles having a bituminous backing, or a backing having similar properties, that allows the tiles to be accurately and quickly laid and which ensures not only that the laid tiles have increased resistance to

becoming displaced, but also that selected tiles can be readily lifted for replacement or to allow access to underfloor facilities.

According to a first aspect of the present invention, there is provided a method of laying carpet tiles on a floor in which one or more fixing devices are placed on the floor, each fixing device having means adapted to releasably secure thereto a carpet tile placed thereon, and in which carpet tiles are laid in abutting relationship on the floor such that a fixing device bridges abutting edges of at least some if not all adjacent tiles so as to secure such adjacent tiles to each other.

Thus, it should be understood that when a floor has been covered by carpet tiles according to the present invention, the carpet tiles, being fixed at each edge to the adjacent carpet tiles by the respective fixing devices underlying the edges, will not be easily displaced but nevertheless may be readily lifted and replaced.

According to another aspect of the present invention there is provided a fixing device for use in the method of the invention comprises a plate that is of a thickness such that the plate is strong enough to resist displacement of carpet tiles secured thereto but, at least after initial fixing and use, can be accommodated in a conventional bituminous carpet tile backing without causing any noticeable perturbation in the upper surface of the tile.

Thus with presently available conventional carpet tiles the fixing device should be no thicker than 0.5mm.

Preferably, to provide adequate fixing, the fixing devices are formed from metal plates, advantageously formed of stainless steel.

Conveniently, the fixing plates may be no larger than 80mm x 40mm, and a size of 60mm x 30mm has been found adequate to provide an acceptable fixing for presently available bituminous based carpet tiles.

With such metal fixing plates the means for securing the carpet tile to the plate preferably comprises upstanding tangs punched out of the plate. Furthermore the fixing plates may each be provided with a central line, notches, or some other visible marking midway between its ends, to assist in quick laying of the devices along a line. At least some of the fixing plates, for example those to be placed along the line may, for certain applications, be provided with an adhesive backing to hold them in position on the floor while the carpet tiles are laid thereon.

The invention will now be further described, merely by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a fixing device according to the invention;

Figure 2 is a cross-section, taken on the line 2-2 in Figure 1;

Figure 3 is a plan view, on a reduced scale, illustrating a method of laying carpet tiles according to the invention; and

Figure 4 is a plan view, on a reduced scale, illustrating part of an alternative method of laying carpet tiles according to the invention.

The carpet tile fixing device illustrated in Figures 1 and 2 comprises a stainless steel plate 11. Five tangs 12 are punched out of each half of the plate 11, and the plate 11 is marked, as at 13, to indicate the centre of the plate 11.

The fixing device of this example is 60mm x 30mm and is formed from 0.25mm stainless steel sheet. Each tang is shaped as an equilateral triangle with sides 4mm in length. It has been found that such a fixing device provides a satisfactory and convenient universal fixing for use with conventional carpet tiles.

Nevertheless, it should be understood that the dimensions and number and arrangement of the tangs are not critical and can be varied to suit any unusual tiles, or requirements, although generally the arrangement should be such that the tangs penetrate into the backing of the tile without protruding therethrough and that they hold the tile securely; and, of course, the thickness of the device should be such that after a tile has been fixed on the device, the device can become bedded into the backing sufficiently to ensure that no noticeable protrusion is apparent in the surface of the tile.

Accordingly, it is thought that fixing devices for use with conventional carpet tiles, which are typically around 500mm x 500mm, or 600mm x 600mm, with a backing formed of a bitumen based composite material normally about 3.5mm thick, should be within the range of 50mm x 25mm to 80mm x 40mm and of a thickness between 0.20mm and 0.50mm and preferably between 0.25mm and 0.50mm.

The fixing devices may be moulded in a plastics material with integral tangs or other means for releasably securing a carpet tile thereto such as spikes or other upstands, or the devices may each comprise a composite assembly of a backing plate to which tangs, spikes or other upstands, or other means for releasably securing a carpet tile to the fixing device, have been secured.

Conveniently, the fixing devices should be provided in packs containing sufficient similar fixing devices to allow a predetermined number of tiles to be fixed or a predetermined area to be carpeted.

In use a "centre-line" 14 (see Figure 3) is marked across the floor to be carpeted with tiles such as 15; as in the conventional methods of laying carpet tiles the "centre-line" may not necessarily be in the actual centre of the floor, but is positioned such that, if possible, all the cut tiles needed at the edges of the floor are of a reasonable width.

Fixing plates 11 are positioned along the line 14 spaced apart by approximately the width of the tiles 15. As accuracy of spacing is not significant, the plates 11 can be quickly placed along the line 14 with the central markings 13 helping in the alignment of the plates 11 across the line 14, and the plates 11 may have an adhesive backing to help retain them in position on the floor as the tiles are laid thereon.

Two carpet tiles 15a are then laid across a fixing plate 11a with adjacent sides of the tiles 15a abutting together along the centre line 14, and the tiles are pressed down such that the tangs penetrate the backing of each tile and thereby retain each tile in position.

Six further fixing plates 11b are then placed each with one half under a free side of the tiles 15a and the other half of the fixing plates 11b protruding ready for the fixing of further tiles adjacent those sides.

Further tiles 15b are then similarly laid along the centre line 14 until they, with any part tiles required at the ends of the centre line 14, reach the sides of the area to be carpeted, with respective fixing plates placed under the free sides of the two central rows of tiles as described above.

Additional rows of tiles, such as 15c, are then added along each side of the two central rows of tiles until, as before, they cover the whole of the area to be carpeted.

When the area has been fully carpeted it will be understood that the fixing plates 11 joining abutting edges of all the respective mutually adjacent tiles 15 resist any displacement of the tiles. Nevertheless, any individual tiles 15 can be readily lifted to allow replacement of worn or damaged tiles, and to allow access to any underfloor facilities.

It should be understood that the pattern or order of laying may be varied to suit individual preferences or requirements, but the method should be such that when the area has been fully carpeted a fixing

device bridges abutting edges of at least some if not all mutually adjacent tiles such as to secure such adjacent tiles to each other.

An alternative method of laying carpet tiles that is particularly suitable for use for tiling a panelled raised-access floor will now be described with reference to Figure 4.

Generally, raised-access floors are now formed by an array of 600mm square panels such as 16 shown in Figure 4, and of course, in this case the carpet tiles to be used will also be 600mm square.

In this alternative method of laying such carpet tiles, a "tackifier adhesive", such as an acrylic polymer emulsion, is applied across a row of the flooring panels 16 that, preferably, spans a substantially central region of the floor area, and optionally also across a similar row normal to the first row, as indicated at 17.

The tackifier adhesive is applied in known manner by a brush such that it does not cover the abutting edges of the floor panels 16 but does provide a tacky surface to stop a carpet tile laid thereupon from readily sliding across the surface of the flooring panels.

Carpet tiles are then laid on each of the rows of flooring panels 16 that have had the tackifier adhesive applied to their surface.

Fixing plates such as 2 are then placed on the floor under the free edges of tiles with each free edge of the tiles having a plate with one half under the free edge and the other half protruding ready for the fixing of further tiles.

Additional rows of tiles are then added in similar manner to that described with reference to Figure 3 until the floor is completely tiled.

CLAIMS

- 1 A method of laying carpet tiles on a floor in which one or more fixing devices are placed on the floor, each fixing device having means adapted to releasably secure thereto a carpet tile placed thereon, and in which carpet tiles are laid in abutting relationship on the floor such that a fixing device bridges abutting edges of at least some if not all adjacent tiles so as to secure such adjacent tiles to each other.
- 2 A method of laying carpet tiles as claimed in Claim 1 which include marking a line across the floor on which the tiles are to be laid, placing a row of fixing devices along the line spaced from each other by about the width of the tiles to be laid, the devices each having means adapted to releasably secure thereto a carpet tile pushed down on the device, securing a pair of carpet tiles in abutting relationship to one of the fixing devices, so the fixing device bridges the abutting edges thereof placing a further fixing device under one or more of the free sides of the secured tiles, progressively laying additional tiles in similar manner with a fixing device bridging at least some if not all the abutting edges of adjacent tiles.
- 3 A method of laying carpet tiles as claimed in Claim 1 which includes laying a row of abutting carpet tiles across a floor on which the tiles are to be laid, with the tiles in the row being held in position against sliding across the floor by a tackifying adhesive, placing a fixing device on the floor under the free edges of the tiles in the row such that each device lies partially under its respective tile but extends outwardly therefrom to receive a further tile placed thereon in abutting relationship, and laying a further row of tiles on the extending portions of the fixing devices with additional fixing devices bridging at least some if not all the abutting edges of adjacent tiles, and progressively adding further rows of tiles in similar manner.

- 4 A method of laying carpet tiles as claimed in Claim 3 which includes laying a second row of abutting carpet tiles, held in position by a tackifying adhesive, at right angles to the first row.
- 5 A fixing device for use in the method claimed in claim 1 which comprises a plate having means for releasably securing thereto a carpet tile pushed down on the device, the plate being of a thickness such that the plate is strong enough to resist displacement of carpet tiles secured thereto but, at least after initial fixing and use, can be accommodated in the carpet tile backing without causing any significant perturbation in the upper surface of the tile.
- 6 A fixing device as claimed in Claim 5 in which the releasable securing means comprise a number of tangs, spikes or other upstands extending from one face of the plate.
- 7 A fixing device as claimed in Claim 5 or 6 in which the plate has a thickness in the range 0.20mm to 0.50mm.
- 8 A fixing device as claimed in Claim 7 in which the thickness is in the range 0.25mm to 0.50mm.
- 9 A fixing device as claimed in any one of Claims 5 to 8 which is formed from a metal plate.
- 10 A fixing device as claimed in Claim 9 which is formed of stainless steel.
- 11 A fixing device as claimed in any one of the Claims 5 to 10 which is no larger than 80mm x 40mm.
- 12 A fixing device as claimed in Claim 11 in which the device is between 50mm x 25mm and 80mm x 40mm.

- 13 A fixing device as claimed in any one of Claims 5 to 12 which includes a plurality of tangs punched out of the plate.
- 14 A fixing device as claimed in any one of Claims 5 to 13 in which the device includes a marking for indicating the central line of the device.
- 15 A fixing device as claimed in any one of Claims 5 to 14 in which the back of the device includes a self adhesive backing.
- 16 A fixing device for use in the method of laying carpet tiles as claimed in Claim 1 substantially as hereinbefore described with reference to the accompanying drawings.
- 17 A pack of fixing devices for use in the method of laying carpet tiles as claimed in Claim 1, including a plurality of the fixing devices as claimed in Claims 5 to 16.
- 18 A method of laying carpet tiles substantially as hereinbefore described with reference to Figures 1, 2 and 3 of the accompanying drawings.
- 19 A method of laying carpet tiles substantially as hereinbefore described with reference to Figures 1, 2 and 4 of the accompanying drawings.
- 20 A floor carpeted with tiles laid by the method claimed in Claim 1, 2, 3, 4, 18 or 19.

Amendments to the claims have been filed as follows

1. A method of laying carpet tiles on a floor including fixing a tile or a row of tiles to the floor, in which a fixing device is placed under at least one of the free side edges of the fixed tile or of at least some of the fixed row of tiles, each fixing device having means adapted to releasably secure thereto a carpet tile placed thereon, and in which further carpet tiles are laid in abutting relationship on the floor with a fixing device bridging abutting edges of at least some if not all adjacent tiles so as to secure such adjacent tiles to each other, but without fixing at least the majority of the said further carpet tiles to the floor.
2. A method of laying carpet tiles as claimed in Claim 1 which include marking a line across the floor on which the tiles are to be laid, placing a row of fixing devices along the line spaced from each other by about the width of the tiles to be laid, the devices each having means adapted to releasably secure thereto a carpet tile pushed down on the device, securing a pair of carpet tiles in abutting relationship to one of the fixing devices, so the fixing device bridges the abutting edges thereof placing a further fixing device under one or more of the free sides of the secured tiles, progressively laying additional tiles in similar manner with a fixing device bridging at least some if not all the abutting edges of adjacent tiles.
3. A method of laying carpet tiles as claimed in Claim 1 which includes laying a row of abutting carpet tiles across a floor on which the tiles are to be laid, with the tiles in the row being held in position against sliding across the floor by tackifying adhesive, placing a fixing device on the floor under the free edges of the tiles in the row such that each device lies partially under its respective tile but extends outwardly therefrom to receive a further tile placed thereon in abutting relationship, and laying a further row of tiles on the extending portions of the fixing devices with additional fixing devices bridging at least

some if not all the abutting edges of adjacent tiles, and progressively adding further rows of tiles in similar manner.

4. A method of laying carpet tiles as claimed in Claim 3 which includes laying a second row of abutting carpet tiles, held in position by a tackifying adhesive, at right angles to the first row.
5. A fixing device for use in the method claimed in Claim 1 which comprises a plate having upstanding tangs or spikes for releasably securing thereto a carpet tile pushed down on the device so that the tangs penetrate the tile backing, the plate being of a thickness such that the plate is strong enough without the necessity of securing it to the floor to resist displacement of a carpet tile secured thereto but, at least after initial fixing and use, can be accommodated in the carpet tile backing without causing any significant perturbation in the upper surface of the tile.
6. A fixing device as claimed in Claim 5 in which the plate has a thickness in the range 0.20 mm to 0.50 mm.
7. A fixing device as claimed in Claim 6 in which the thickness is in the range 0.25 mm to 0.50 mm.
8. A fixing device as claimed in any one of Claims 5 to 7 which is formed from a metal plate.
9. A fixing device as claimed in Claim 8 which is formed of stainless steel.
10. A fixing device as claimed in any one of the Claims 5 to 9 which is no larger than 80 mm x 40 mm.
11. A fixing device as claimed in Claim 10 in which the device is between 50 mm x 25 mm and 80 mm x 40 mm.

12. A fixing device as claimed in any one of Claims 5 to 11 which includes a plurality of tangs punched out of the plate.
13. A fixing device as claimed in any one of Claims 5 to 12 in which the device includes a marking for indicating the central line of the device.
14. A fixing device as claimed in any one of Claims 5 to 13 in which the back of the device includes a self adhesive backing.
15. A fixing device for use in the method of laying carpet tiles as claimed in Claim 1 substantially as hereinbefore described with reference to the accompanying drawings.
16. A pack of fixing devices for use in the method of laying carpet tiles as claimed in Claim 1, including a plurality of the fixing devices as claimed in Claims 5 to 15.
17. A method of laying carpet tiles substantially as hereinbefore described with reference to Figures 1, 2 and 3 of the accompanying drawings.
18. A method of laying carpet tiles substantially as hereinbefore described with reference to Figures 1, 2 and 4 of the accompanying drawings.
19. A floor carpeted with tiles laid by the method claimed in Claim 1, 2, 3, 4, 18 or 19.



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Claims searched: 1-20

Examiner: John Fulcher
Date of search: 8 May 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A4S(S1H,S1L,S1M)

Int Cl (Ed.6): A47G 27/04

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X,E	GB 2282965 A (WALK OFF MATS) -see figs 1-3	1,2,18,20
X	GB 1134731 A (ROBERTS) -see figs 1 and 2	5-15,17
X	GB 0980168 A (SEAGER) -see fig 1	5-14,17
X	GB 0933292 A (JOHNSON) -see figs 1 and 2	5-14,17
X	GB 0329163 A (APPLEYARD) -see figs 1 and 2	5,6,9,17
X	EP 0432999 A2 (KIMBERLY-CLARK) -see figs 1-7	1,2,5,6,20
X	WO 86/01247 A1 (DESIGNAFLOOR) -see figs 1-3	1,2,18,19, 20

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.